

The West American Hipponicidae and the Application of *Malluvium*, *Antisabia*, and *Hipponix* as Generic Names

BY

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(4 Plates)

THE FINDING OF THREE specimens of an unrecognized Hipponicid at Tasu Harbour, Queen Charlotte Islands, British Columbia, has led me to re-examine the representatives of this family described from the Northern Pacific, and to compare these with some other species. MORRISON (1965) described characteristics of the embryonic shell in the Hipponicidae that he believed to be of importance in distinguishing four genera within the conventional genus *Hipponix* Defrance 1819. These were *Antisabia*, *Sabia*, *Malluvium*, and *Pilosabia*. The characteristics used were the plane of coiling; the vertical component in the spiral, resulting in either neritoid or amnicoloid form; and the presence or absence of longitudinal surface sculpture.

Specimens in which all details of the larval shell are retained are scarce in collections but I have assembled material representing *Hipponix foliacea* Quoy and Gaimard 1835, *H. lissus* (E. A. Smith, 1894), *H. benthophila* (Dall, 1889); *H. tumens* Carpenter, 1864, *H. grayanus* Menke 1853, *H. serratus* Carpenter, 1857, *H. cranioides* Carpenter, 1864, *H. otohimeae* Habe, 1946, *H. antiquatus* (Linnaeus, 1767), *H. panamensis* C. B. Adams, 1852, *Pilosabia pilosa* (Deshayes, 1832) and *Sabia conica* (Schumacher, 1817).

GENERIC DESIGNATIONS

The generic name *Sabia* Reeve, 1842, was based upon the species *H. conica* (Schumacher, 1817) (Figures 3 and 4). *Hipponix australis* Quoy and Gaimard 1835, is regarded as a synonym of *H. conica* (Cotton 1959), (McPHERSON & GABRIEL 1962).

Sabia conica is an abundant species well represented in collections (Figures 3, 4). Furthermore it retains its larval shell more frequently than many other species. The

larval shell makes slightly less than one revolution. It is much larger than that of frequently sympatric *Hipponix foliacea* and measures about 0.5 mm in diameter. The larval shell is rust red or originally white becoming red by half a whorl, brilliantly glossy on the dorsal surface and is unique in being finely cancellate and in bearing distinct, fine grooves and threads longitudinally on the lower surface only. These grooves average 10 in 0.3 mm before expanding into the post-larval shell. The line of junction is usually distinct. The orientation of the larval shell is variable, frequently about the same as in *H. foliacea* but with a greater tendency to move the transverse axis into a more nearly horizontal plane. The nucleus is variable in form from planospiral to naticoid. Most are planospiral and have the apex broad, blunt, and included within the whorl.

The post-larval shell shows the strong coarse ridging that characterizes the adult shell. These are not extensions of the larval ridges.

The adult shell is fairly uniform in shape, tall, cap-shaped, with the apex close to the posterior margin. Longitudinal ridges fairly regular, broader than the grooves between them, smooth, and with a tendency to bifurcate near exterior margin. I have seen no indication that the foot secretes a basal plate. This species usually occurs attached to the shells of living molluscs.

Pilosabia Iredale, 1929 rests upon the species *Hipponix pilosus* Deshayes, 1832 (Figures 1, 2). This species has several characteristics distinguishing it from all other Hipponicids. The nucleus is naticoid with a relatively high spiral and the nuclear apex fine and not adpressed to the adult shell. The mature animal secretes a thick basal plate bearing incremental lines. The nucleus consists of almost two complete whorls; $\frac{1}{2}$ to $\frac{2}{3}$ the depth of each whorl free; main axis vertical or rotated 45°; entire embryonic shell held separate from adult shell; extended, terminal,

smooth, opaque, white, becoming brownish at flaring base. First increment of adult shell faintly sculptured radially. Adult shell with broad numerous rounded radial ridges, periostracum coarsely bristled. MORRISON (1965) suggests that the name *Patella trigona* Gmelin is an earlier synonym for *H. pilosus*. KEEN (1971) points out that this name is based upon a brief description of a shell from an unknown locality, citing a figure in a nonbinomial work, and rejects the validity of the name. *Hipponix barbata* Sowerby, 1835 appears to be a synonym of *H. pilosus* (Deshayes).

The generic name *Antisabia* Iredale 1937 was applied to *H. foliacea* Quoy and Gaimard, 1835 (Figures 9, 10). I have examined two dozen specimens in which the details of the larval shell of this species are clearly discernible. Larval shell small (0.13–0.15 mm in diameter), white, translucent, glossy, completely smooth, and naticoid in form; transverse axis usually approximately vertical but inclined dorsally toward the main axis of the shell. Apex of larval shell fine, delicate, and distinct. The post-larval shell, in sharp contrast, bears distinct longitudinal striae. Morrison's statement that the nuclear shell of this species is prominently spirally ridged and neritoid in shape is not borne out by the material I have seen. Perhaps his specimens had become mixed during museum storage.

Malluvium Melvill, 1906 was based upon the species *Hipponix lissus* (E. A. Smith, 1894). This species has a smooth larval shell of about 1½ globose whorls, neritoid in form. Adult shell without sculpture except for incomplete growth lines. The foot secretes a basal plate. MELVILL, 1906 refers *H. benthophila* (Dall, 1889) to the subgenus *Malluvium*. My study confirms *H. benthophila* as having no sculpture on the larval or adult shell (Figures 11, 12), and in secreting a basal plate. It is unique, however, in the form and position of the larval shell. *Hipponix otohimea* Habe, 1946 (Figures 7, 8) and *H. lissus* (Figures 5, 6) are similar in details of larval shell but there is no information upon whether or not *H. otohimea* secretes a basal plate.

Thus the characteristics provided by the hard parts of the Hipponicid molluscs include those of embryonic shell,

decoration of embryonic shell, shape and decoration of adult shell, presence or absence of a basal plate secreted by the foot, and presence or absence of a thick persistent periostracum.

The characteristics of *Pilosabia pilosa* (Deshayes, 1832) seem to me to be sufficiently distinctive to warrant recognizing the species as a separate genus. The species recognized by MORRISON (1967) as *Sabia conica* (Schumacher, 1817) also has a combination of characters of the larval and adult shells that suggest generic distinction. In these decisions I concur with Morrison.

However, he also suggested dividing the remaining species between 2 genera on the basis of the form and decoration of the larval shell. Inasmuch as he included species of differing larval form in each of his proposed genera, the decoration of the larval shell became the sole basis of separation. He proposed elevating the subgeneric name *Malluvium* Melvill, 1907 to generic status to include the species with smooth larval shells. The species with striated larval shell he referred to the genus *Antisabia* Iredale, 1937. I have shown above that both *Malluvium* Melvill, 1907, and *Antisabia* Iredale, 1937, were originally applied to species with no decoration on the larval shell. On the basis of available information, therefore, *Antisabia* must be regarded as a synonym of *Malluvium*.

SYSTEMATIC STATUS OF AMERICAN SPECIES

There has been uncertainty as to the status of *H. antiquatus* (Linnaeus, 1767), *H. panamensis* C. B. Adams, 1852, *H. cranioides* Carpenter, 1864, and *H. serratus* Carpenter, 1857. KEEN (1971) refers to the paucity of characters available for use in systematic distinction of the simple shells of Hipponicids and suggests that the common West American species be recognized as specifically distinct from *H. antiquatus* of the Atlantic shores, pending further information.

Explanation of Figures 1 to 6

- Figure 1: *Pilosabia pilosa*, adult shell
- Figure 2: *Pilosabia pilosa*, larval shell
- Figure 3: *Sabia conica*, adult shell
- Figure 4: *Sabia conica*, larval shell
- Figure 5: *Hipponix lissus*, adult shell
- Figure 6: *Hipponix lissus*, larval shell

Explanation of Figures 7 to 12

- Figure 7: *Hipponix otohimea*, adult shell
- Figure 8: *Hipponix otohimea*, larval shell
- Figure 9: *Hipponix foliacea*, adult shell
- Figure 10: *Hipponix foliacea*, larval shell
- Figure 11: *Hipponix benthophila*, adult shell
- Figure 12: *Hipponix benthophila*, larval shell



Figure 1



Figure 2



Figure 3

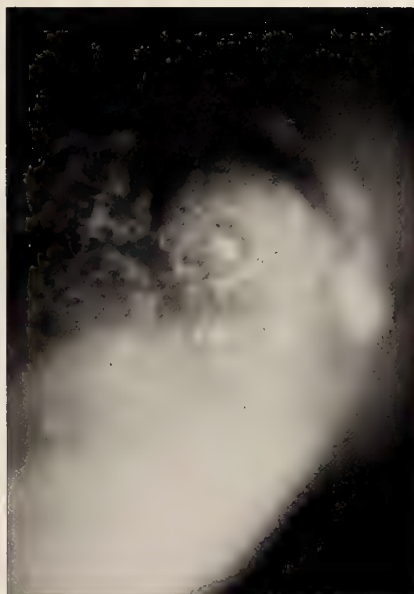


Figure 4

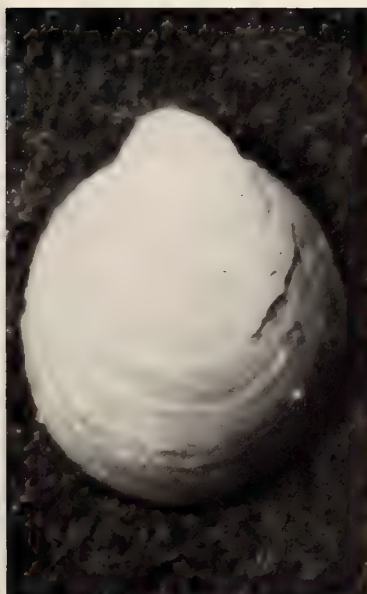


Figure 5



Figure 6

